CLAIMS

1. A hologram recording device comprising:

a laser light source that emits laser light;

a light dividing element that divides the laser light emitted from the laser light source into signal light and reference light;

a light modulating element that modulates the signal light divided at the light dividing element;

a phase modulating element that modulates a phase of the reference light divided at the light dividing element;

an optical system that focuses on a substantially same location of a hologram recording medium the signal light modulated at the light modulating element and the reference light whose phase has been modulated at the phase modulating element; and

a distance controlling mechanism that controls a distance between the phase modulating element and the hologram recording medium.

2. The hologram recording device according to Claim 1, wherein the optical system comprises an objective lens that focuses both the signal light and the reference light on the hologram recording medium.

3. The hologram recording device according to Claim 1, wherein the optical system comprises a lens that transmits only one of the signal light and the reference light.

4. The hologram recording device according to Claim 1, wherein the optical system comprises a first objective lens and a second objective lens, the first objective lens focusing the signal light on the hologram recording medium, the second objective lens focusing the reference light on the hologram recording medium.

5. A hologram reproducing device comprising:

a laser light source that emits laser light;

a phase modulating element that phase-modulates as reference light the laser light emitted from the laser light source;

an optical system that focuses on a hologram recording medium the reference light whose phase has been modulated at the phase modulating element; and

a distance controlling mechanism that controls a distance between the phase modulating element and the hologram recording medium.

6. A hologram recording method comprising:

a light dividing step of dividing laser light emitted

from a laser light source into signal light and reference light;

a light modulating step of modulating by a light modulating element the signal light divided in the light dividing step;

a phase modulating step of modulating by a phase modulating element a phase of the reference light divided in the light dividing step;

a light focusing step of focusing on a substantially same location of a hologram recording medium the signal light modulated in the light modulating step and the reference light whose phase has been modulated in the phase modulating step; and

a distance controlling step of controlling a distance between the phase modulating element and the hologram recording medium.

7. A hologram reproducing method comprising:

a phase modulating step of phase-modulating laser light as reference light by a phase modulating element, the laser light being emitted from a laser light source;

a light focusing step of focusing on a hologram recording medium the reference light whose phase has been modulated in the phase modulating step; and

a distance controlling step of controlling a distance

between the phase modulating element and the hologram recording medium.

8. A hologram recording medium on which data is recorded by a hologram recording method, the hologram recording method comprising:

a light dividing step of dividing laser light emitted from a laser light source into signal light and reference light;

a light modulating step of modulating by a light modulating element the signal light divided in the light dividing step;

a phase modulating step of modulating by a phase modulating element a phase of the reference light divided in the light dividing step;

a light focusing step of focusing on a substantially same location of a hologram recording medium the signal light modulated in the light modulating step and the reference light whose phase has been modulated in the phase modulating step; and

a distance controlling step of controlling a distance between the phase modulating element and the hologram recording medium.